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DRUCKSYSTEME

PICA II

Service Instructions

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Carl Valentin label printers comply with the following safety guidelines:

CE EG Low-Voltage Directive (2006/95/EC)
EG Electromagnetic Compatibility Directive (2004/108/EC)

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1 Notes on this Document

1.1 User Notes

This service manual is intended for qualified service and maintenance staff.

This manual contains information about hardware and mechanical part of the label printers 104/8, 106/12, 103/8 T and 108/12 T.

Information about operation of printer can be taken from our operating manual.

If a problem arises that cannot be solved with help of this service of manual, then please contact your responsible dealer.

1.2 Warnings

Warnings are presented with three signal words for the different levels of danger.

DANGER identifies an extraordinarily great and immediate danger which could lead to serious injury or even death.

WARNING identifies a possible danger would could lead to serious bodily injury or even death if sufficient precautions are not taken.

CAUTION indicates a potentially dangerous situation which could lead to moderate or light bodily injury or damage to property.

DANGER!

Risk of death via electric shock!

⇒ Before opening the housing cover, disconnect the device from the mains supply and wait approx. 2 - 3 minutes until the power supply unit has discharged.

1.3 Cross References

Item numbers

References to specific items in a figure are marked with item numbers. They are identified with parentheses in the text, e.g. (9). If no figure number is provided, item numbers in the text always refer to the graphic directly above the text. If a reference is made to another graphic, the figure number is specified, e.g. (2, in figure 5).

Cross references to chapters and sections

For a cross reference to chapters and sections, the chapter number and page number are specified, e.g. a reference to this section: see chapter 1.3.2, on page 35.

References to other documents

References to other documents have the following form: see *'operating manual'*.

2 Safety Instructions

2.1 General Safety Instructions

Workplace and method of working

⇒ Keep the area around the device clean during and after maintenance.

⇒ Work in a safety-conscious manner.

⇒ Store dismantled device parts in a safe place while maintenance is being performed.

Clothing

WARNING!

The drawing in of items of clothing by moving parts can lead to injuries.

⇒ If possible, do not wear clothing which could be caught by moving device parts.

⇒ Button or roll up shirt or jacket sleeves.

⇒ Tie or pin up long hair.

⇒ Tuck the ends of scarves, ties and shawls into your clothing or secure them with non-conductive clips.

DANGER!

Risk of death from increased flow of current via metals parts which come into contact with the device.

⇒ Do not wear clothing with metal parts.

⇒ Do not wear jewellery.

⇒ Do not wear glasses with a metal frame.

Protective clothing

If a possible danger to your eyes is present, wear protective goggles, especially in the following cases:

- when knocking in or knocking out pins and similar parts with a hammer
- when using spring hooks
- when loosening or inserting springs, snap rings and gripping rings
- when soldering
- when using solvents, cleaning agents or other chemicals

Protective equipment

WARNING!

Risk of injury in case of missing or faulty protective equipment.

⇒ After performing maintenance work, attach all safety equipment (covers, safety precautions, ground cables etc.).

⇒ Replace faulty parts and those which have become unusable.

2.2 Safety Handling when Working with Electricity

Qualifications of personnel

⇒ The following work may only be performed by instructed and trained electricians:

- work on the electrical assemblies
- work on the device while it is open and connected to the power supply.

General precautions to be heeded when beginning maintenance

⇒ Locate the emergency-stop or power switch so that it can be actuated in case of an emergency.

⇒ Unplug the device from the electrical outlet before performing the following work:

- removing or installing power supply units
- working in the immediate vicinity of exposed power supply parts
- mechanical inspection of power supply parts
- modifying the device circuits.

⇒ Ensure that the device is de-energized.

⇒ Check the workplace for possible sources of danger, e.g. moist floors, defective extension cables, faulty protective conduction connections.

Additional precautions to be heeded for devices with exposed energized parts

⇒ Give another person the task of remaining near the workplace. This person must be familiar with the location and operation of the emergency-stop and power switches and switch off the power if danger arises.

⇒ Use only one hand while working on electrical circuits when a device is switched on. Hold the other hand behind your back or put it in your jacket pocket.
This prevents the electricity from flowing through your body.

Tools

⇒ To not use worn or damaged tools.

⇒ Use only tools and testing equipment that is suitable for the respective task.

What to do in case an accident occurs

⇒ Proceed in a very cautions and calm manner.

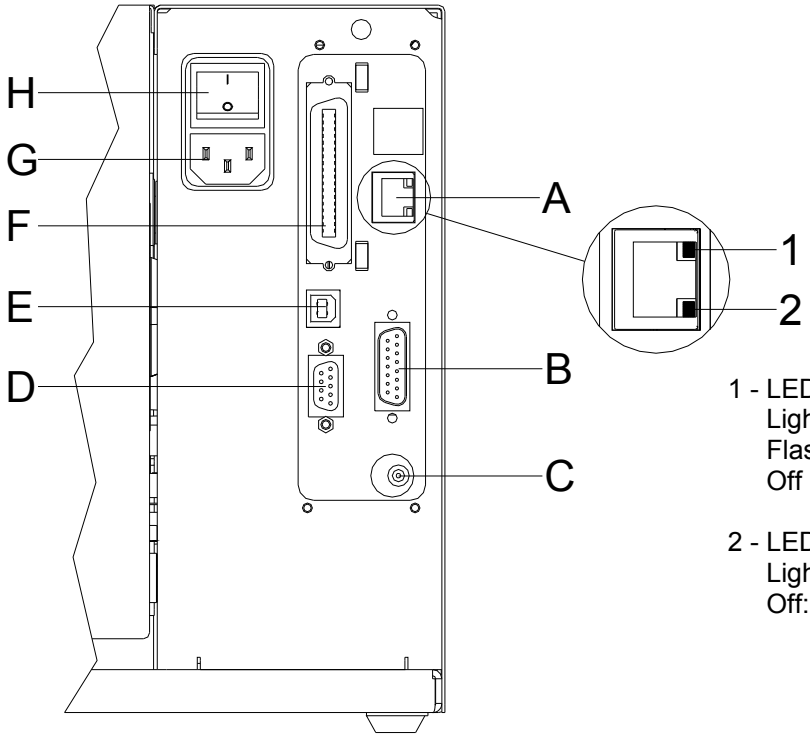
⇒ Avoid endangering yourself.

⇒ Switch the power off.

⇒ Request medical help (emergency physician).

⇒ Call for first aid if necessary.

3 Connector Pin Assignment (Printer Rear)



1 - LED orange
Lighting = Connection active
Flashing = Data transfer
Off = No connection

2 - LED green
Lighting: Speed 100 MBit
Off: Speed 10 MBit

Figure 1

A Ethernet 10/100 Interface
B External Output/Input (Option)
C Winder Connection
D Serial Interface RS-232
Pin 2 = TXD, Pin 3 = RXD, Pin 5 = GND,
Pin 7 = CTS, Pin 8 = RTS
E USB Interface
F Centronics
G Power Supply
H Switch On/Off

4 Cleaning

DANGER!

Risk of death via electric shock!

⇒ Before opening the housing cover, disconnect the device from the mains supply and wait approx. 2 - 3 minutes until the power supply unit has discharged.

Cleaning schedule

Task	Frequency
General cleaning (see chapter 4.1, on page 12).	As necessary.
Cleaning print roler (see chapter 4.2, on page 12).	Each time the label roller is changed or when the printout and label transport are adversely affected.
Cleaning printhead (see chapter 4.3, on page 13).	**Direct thermal printing:** Each time the label roller is changed. **Thermal transfer printing:** Each time the transfer ribbon is changed or when the printout is adversely affected.
Cleaning label photocell (see chapter 4.4, on page 14).	When the label roller is changed.

WARNING!

Risk of fire by easily inflammable label soluble!

⇒ When using label soluble, dust must be completely removed from the label printer and cleaned.

4.1 General Cleaning

CAUTION!

Abrasive cleaning agents can damage the label printer!

⇒ Do not use abrasives or solvents to clean the outer surface of the label printer.

⇒ Remove dust and paper fuzz in the printing area with a soft brush or vacuum cleaner.

⇒ Clean outer surfaces with an all-purpose cleaner.

4.2 Cleaning the Print Roller

A soiled print roller can lead to reduced print quality and can affect transport of material.

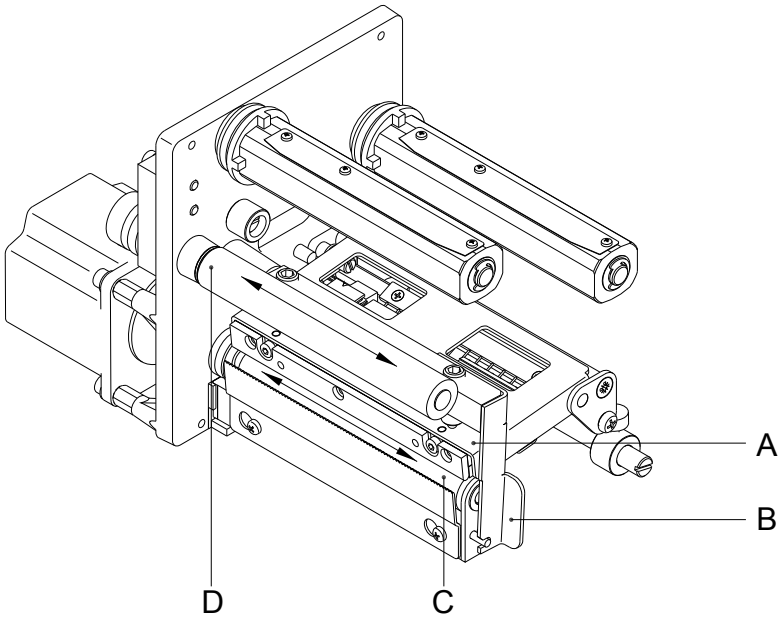


Figure 2

1. Open the printer cover.
2. Turn lever (B) counter clockwise to lift up the printhead (A).
3. Remove labels and transfer ribbon form the label printer.
4. Remove deposits with roller cleaner and a soft cloth.
5. Turn the roller (C + D) manually step by step to clean the complete roller (only possible when printer is switched off, as otherwise the step motor is full of power and the roller is kept in its position).
6. If the roller appears damaged, replace it (see chapter 5.3, on page 18).

4.3 Cleaning the Printhead

Printing can cause accumulation of dirt at printhead e.g. by colour particles of transfer ribbon, and therefore it is necessary to clean the printhead in regular periods depending on operating hours, environmental effects such as dust etc.

CAUTION!

Printhead can be damaged!

⇒ Do not use sharp or hard objects to clean the printhead.

⇒ Do not touch protective glass layer of the printhead.

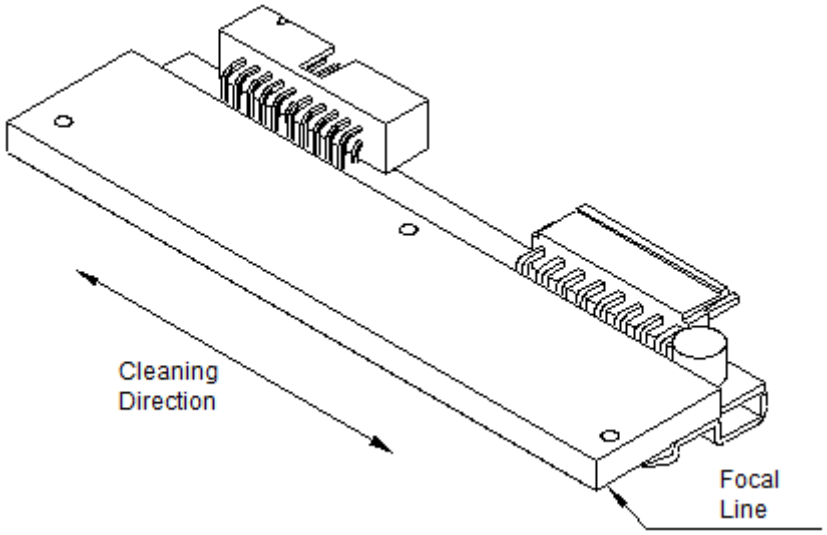


Figure 3

1. Open the printer cover.
2. Turn lever (B, Figure 2) counter clockwise to lift up the printhead.
3. Remove labels and transfer ribbon from the label printer.
4. Clean printhead surface with special cleaning pen or a cotton swab dipped in pure alcohol.
5. Allow printhead to dry for 2-3 minutes before commissioning the printer.

4.4 Cleaning the Label Photocell

CAUTION!

Label photocell can be damaged!

⇒ Do not use sharp or hard objects or solvents to clean the label photocell.

The label photocell can become dirtied with paper dust and this can adversely affect label detection.

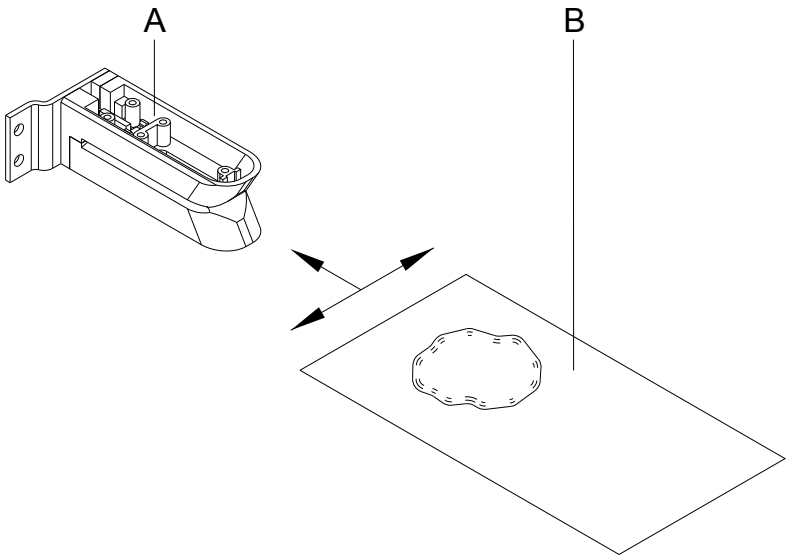


Figure 4

1. Open the printer cover.
2. Turn red lever counter clockwise to lift up the printhead.
3. Remove labels and transfer ribbon from the label printer.
4. Blow out the photocell (A) with pressure gas spray. Observe strictly the instructions on the spray can!
5. Clean the label photocell (A) additionally with a cleaning card (B) before soaked in pure alcohol. Move the cleaning card from one side to the other (see illustration).
6. Reload the labels and transfer ribbon.

5 Replacing Components

DANGER!

Risk of death via electric shock!

⇒ Before opening the housing cover, disconnect the device from the mains supply and wait approx. 2 - 3 minutes until the power supply unit has discharged.

5.1 Tool List

Some service work requires the following tools:

- Philips-head screwdriver, size 1
- Hexagonal wrench 1.5 mm
- Hexagonal wrench 2.5 mm
- Spring scale 10 N
- Spring scale 25 N

5.2 Replacing the Printhead

NOTICE!

The printhead (D) is preinstalled on a head plate (A) and aligned at the factory.

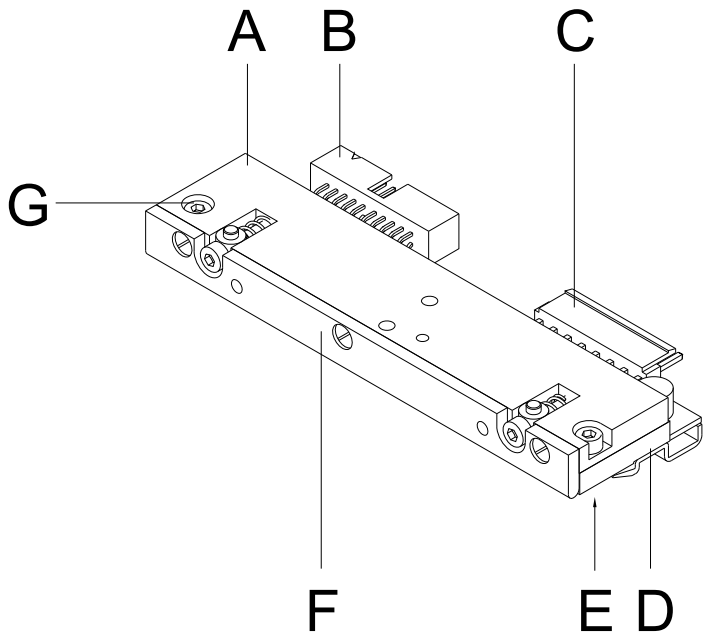


Figure 5

A Head plate
B Plug connection signal
C Plug connection tension
D Printhead
E Focal line
F Guiding
G Screw

CAUTION!

The printhead can be damaged by static electricity discharges and impacts!

⇒ Set up printer on a grounded, conductive surface.

⇒ Ground your body, e.g. by wearing a grounded wristband.

⇒ Do not touch contacts on the plug connections (B, C).

⇒ Do not touch printing line (E) with hard objects or your hands.

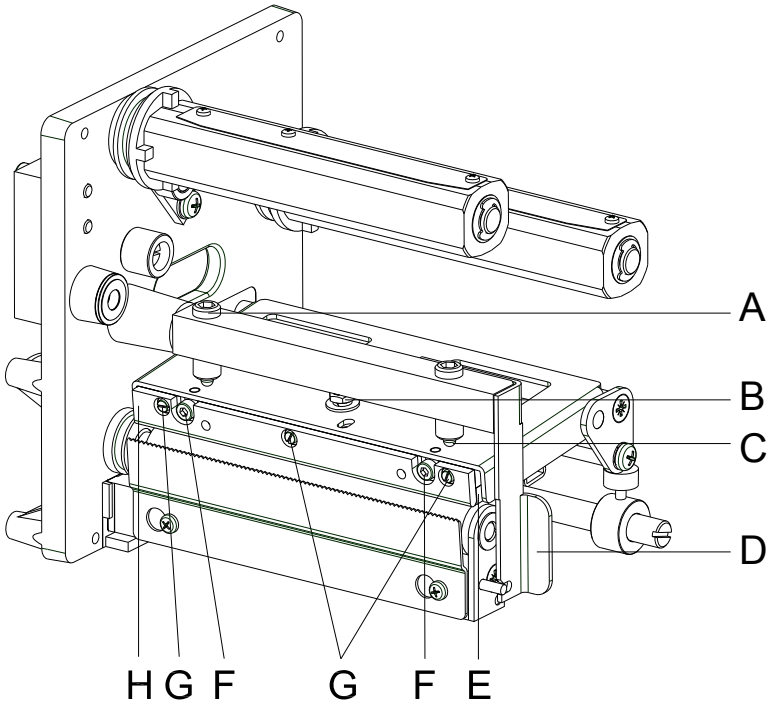


Figure 6

Removing the printhead

1. Remove labels and transfer ribbon from the label printer.
2. When printhead is closed, loosen the fixing screw (B).
3. Turn red lever (D) counter clockwise to lift up the printhead.
4. If the printhead (E) is not disengaged on the pressure roller, continue loosen the fixing screw (B).
5. Remove the printhead carefully to the front until you can reach the plug connections.
6. Remove plug connections and then remove printhead (E).
7. Loosen fixing screws (G) and remove guiding (H).

Installing the printhead

1. Mount guiding (H) with fixing screws (G) at the printhead.
2. Attach plug connections.
3. Position printhead in printhead mounting bracket in such a way that the pins are secured in the corresponding holes in the head plate.
4. Lightly keep printhead mounting bracket on the printer roller with one finger and check for correct positioning of the printhead.
5. Screw in fixing screw (B) and tighten it.
6. Reload labels and transfer ribbon.
7. Check resistance value on the type plate of printhead and if necessary change the value in the Service Functions/Heater Resistance.
8. Check the position of printout and if necessary adjust the print position (see chapter 5.3).

5.3 Adjusting the Print Position

Zero point adjustment in Y direction

NOTICE!

The value for zero point adjustment is set ex works. After replacing the printhead, only service personnel are allowed to set this value anew.

The printer must be in Offline mode.

Press and hold the keys + (> 3 s) to access the service functions.

Press key as long as the menu item *ZP Y-Adjust* is reached.

Indication of value in 1/100 mm.
After replacing the printhead - the print cannot be continued at the same position on the label, the difference can be corrected in printing direction.

While holding down key press key at the same time to increase the value.

While holding down key press key at the same time to increase the value.

Press key to confirm the selection.

Zero point adjustment in X direction

NOTICE!

The value for zero point adjustment is set ex works. After replacing the printhead, only service personnel are allowed to set this value anew.

The printer must be in Offline mode.

Press and hold the keys + (> 3 s) to access the service functions.

Press key as long as the menu item *ZP X-Adjust* is reached.

Indication of value in 1/100 mm.
After replacing the printhead - the print cannot be continued at the same position on the label, the difference can be corrected across the printing direction.

While holding down key press key at the same time to increase the value.

While holding down key press key at the same time to increase the value.

Press key to confirm the selection.

5.4 Replacing the Pressure Roller

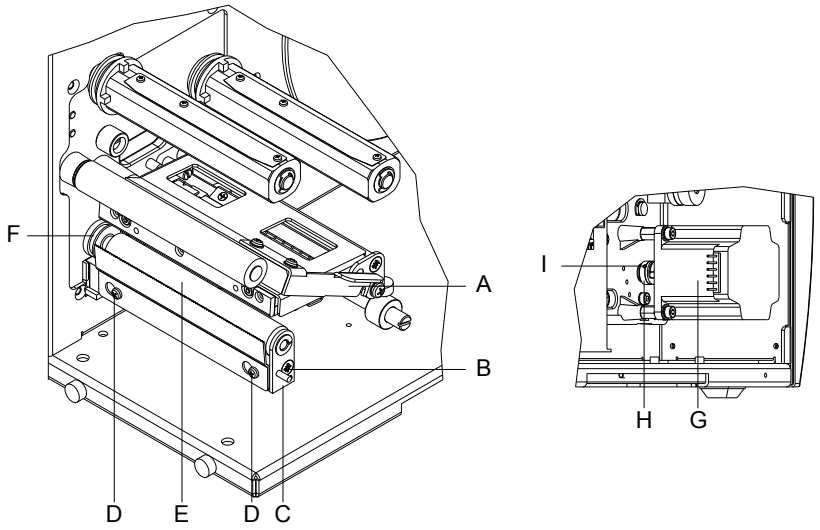


Figure 7

Removing the pressure roller

1. Remove left printer cover.
   Loosen two screws at the lower left printer edge and three screws at the chassis upper edge.
2. Remove the protective conductor at the inside of the printer cover.
3. Loosen screw (D) and remove tear off edge (if mounted) before the pressure roller (E).
4. Turn red lever (A) counter clockwise to lift up the printhead.
5. Open clutch (H) between motor (G) and pressure roller (E) by loosening the headless pin (I).
6. Remove crosshead screw (B) at the outside of aluminium bearing.
7. Remove bearing plate (C).
8. Pull pressure roller (E) outwards. Hold the drive pulley (F).

Installing the pressure roller

1. Mount the new pressure roller (E) through the drillings and the drive pulley (F).
2. When re-installing, pay attention to correct fit of the clutch (H).
3. Tighten bearing plate (C) with crosshead screw (B).
4. Close clutch (H) by means of the headless pin (I).
   The roller has to be installed precisely.
5. Connect the protective conductor to the inside of cover.
6. Mount again the printer cover.

5.5 Replacing the Label Photocell

NOTICE!

Soiling of the label photocell can also cause malfunctions. Before replacing the label photocell, check whether it is soiled and clean it if necessary (see chapter 4.4, on page 14).

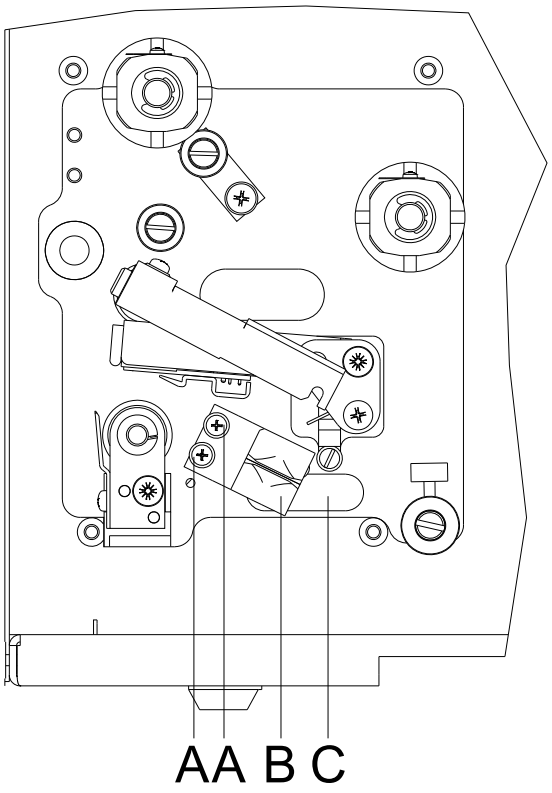


Figure 8

Removing label photocell

1. Remove media from the printer.
2. Remove the left printer cover.
3. Loosen plug connection of label photocell at the CPU.
4. Loosen both crosshead screws (A) and remove label photocell (B).

Installing the label photocell

1. Fix the label photocell (B) with both crosshead screws (A) at the main plate.
2. Guide the photocell cable through the slot hole (C).
3. Re-install the plug connection of photocell with the CPU.
4. Install the left printer cover.
5. Adjust the label photocell.

5.6 Replacing the CPU PCB

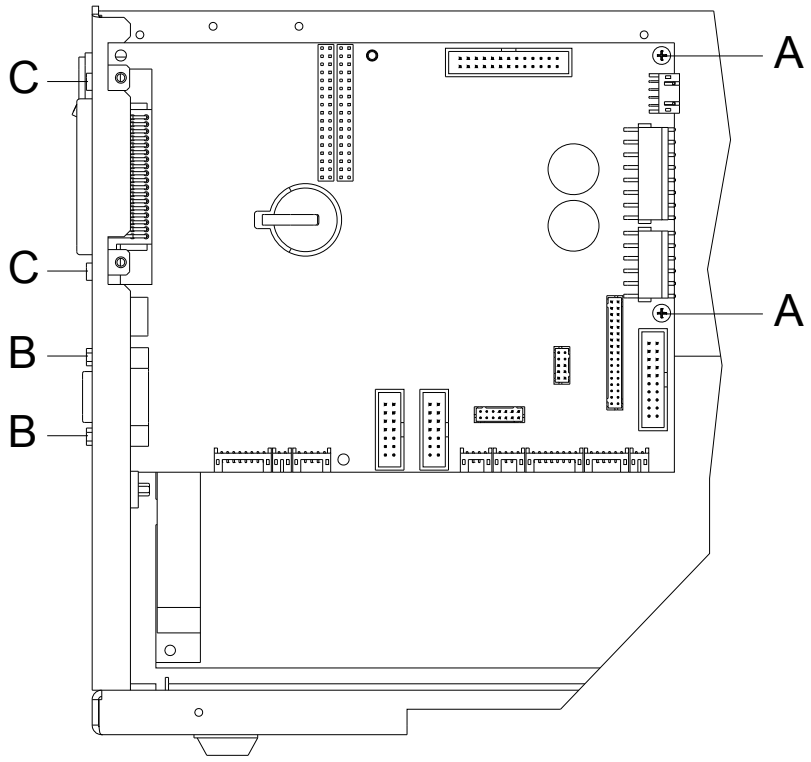


Figure 9

Removing the CPU PCB

1. Unplug the printer from the electrical outlet.
2. Detach all interface cables from the back of the printer.
3. Screw off the left printer cover.
4. Unplug all side plug connections from the CPU PCB.
5. Remove the two screw bolts (B), two screws of Centronics interface (C) and two fixing bolts (A) from the CPU PCB.
6. Carefully remove the CPU PCB.

Installing the CPU PCB

1. Place CPU PCB into the printer.
2. Secure PCB with the two screw bolts (B), two screws of Centronics interface (C) and two fixing screws (A).
3. Insert all plug connections on the PCB.
4. Restore all interface connections on the back of the printer.
5. Connect the power cable at the rear of the printer.
6. Update the firmware if necessary.
7. Adjust the label photocell.

5.7 Replacing the Power Supply

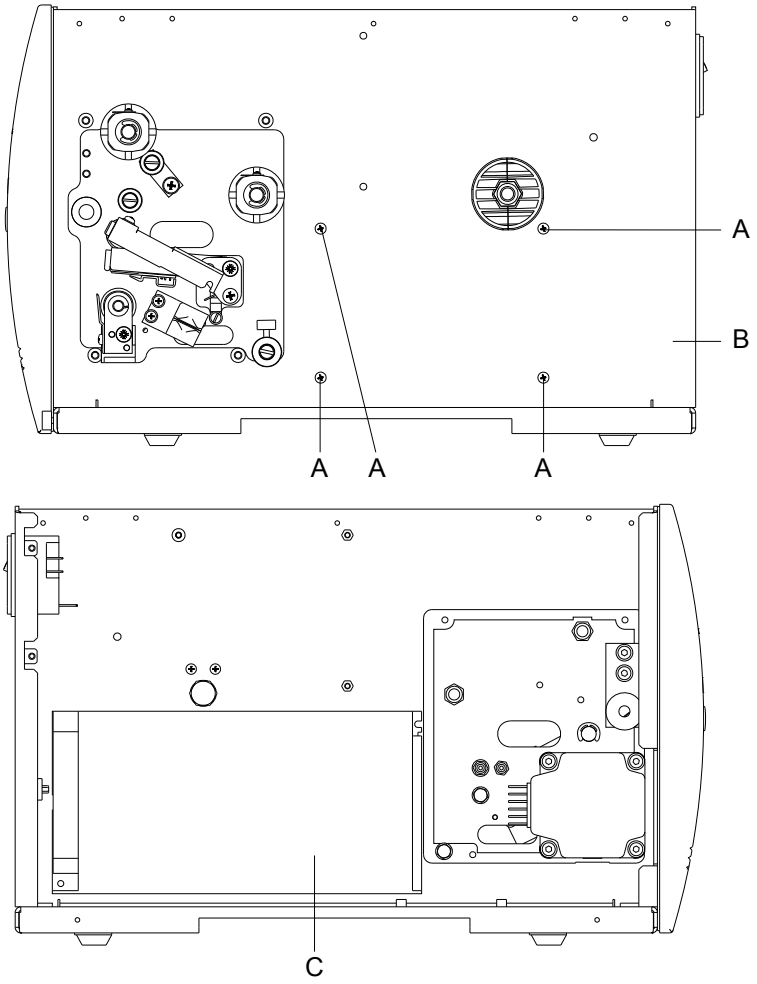


Figure 10

Removing the power supply

1. Unplug the printer from the electrical outlet.
2. Remove the inside and outside label support as well as the label material (if inserted) from the rewinding unit.
3. Unplug all cable connections from power supply (C).
4. Remove the CPU PCB (see chapter 5.6, on page 21).
5. Hold the power supply firmly and unscrew the four screws (A) at the chassis (B) of printer.
6. Remove the power supply unit.

Installing the power supply

1. Insert the new power supply (C) and secure it with screws (A) at the chassis (B).
2. Connect all cable connections at the power supply (C).
   Pay attention to polarity!
3. Install the CPU PCB (see chapter 5.6, on page 21).
4. Install again the label supports at the rewinding unit.

5.8 Replacing the WLAN Module

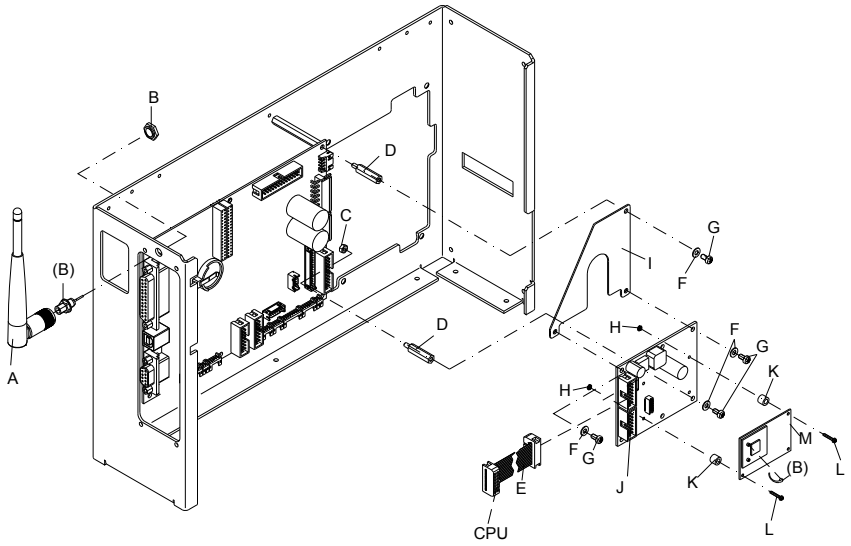


Figure 11

Removing the WLAN module

1. Unplug the printer from the electrical outlet.
2. Screw off the left printer cover.
3. Remove hot melt glue from WLAN module (M) and then remove antenna cable (B) from WLAN module (M).
4. Remove connecting cable (E) from WLAN adapter (J).
5. Loosen screws (G) and washers (F) and dismount the WLAN adapter (J).
6. Dismount screws (L), spacer rings (K) and hex nuts (H) and remove WLAN module (M) from WLAN adapter (J).

Installing the WLAN module

1. Insert the new WLAN module (M) to the WLAN adapter (J) and fix it with screws (L), spacer rings (K) and hex nuts (H) at the WLAN adapter (J).
2. Mount the WLAN adapter (J) with screws (G) and washers (F) at the supporting plate (I) and the hexagon bolt (D).
3. Insert connection cable (E) in the WLAN adapter (J).
4. Connect antenna cable (B) with WLAN module (M) and fix the plug connectors with a drop of hot melt glue.
5. Install the left printer cover.

5.9 Replacing the Battery

DANGER!

Danger of explosion when exchanging the battery improper.

⇒ Pay attention to polarity.

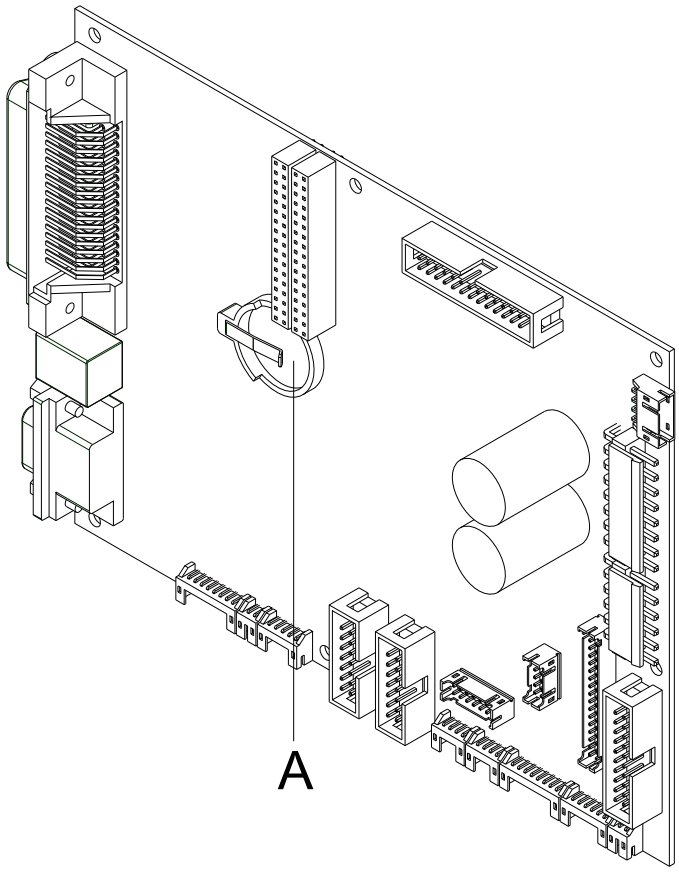


Figure 12

1. Lift up the fixing bracket by means of a non-metallic device (e.g. plastic ruler).
2. Remove the defective battery.
3. Insert a new battery into the support (A) and pay attention to position of polarity.

6 Adjustments, Settings and Alignments

DANGER!

Risk of death via electric shock!

⇒ Before opening the housing cover, disconnect the device from the mains supply and wait approx. 2 - 3 minutes until the power supply unit has discharged.

6.1 Adjusting the Print Mechanism

Major adjustment of the printing mechanism beyond format-based settings is only required if the printhead assembly has been removed or parts in this area have been replaced. Excluded from this is the replacement of the printhead, after which readjustment is generally not required.

The following print quality imperfections may indicate maladjustment of the printing mechanism:

- Print image too light
- Print image is spotty
- Print image lighter on one side
- Horizontal lines not parallel to the horizontal label edges
- Clear lateral drift of the transfer ribbon

NOTICE!

Print image errors can also arise from wrinkling of the transfer ribbon. This is why the transfer ribbon feed path and the head locking system should be checked before making adjustments to the printing mechanism (see *'operating manual'*).

Adjustment of the printing mechanism encompasses the following procedures in the order specified:

1. Adjust the position of printhead (see chapter 6.2, on page 26).
2. Adjust the head contact pressure (see page 27).
3. Adjust the transfer ribbon feed path (see chapter 6.3, on page 28).

6.2 Adjusting the Printhead

Complete the following printhead settings to achieve the best possible print image:

⇒ Align the heating line with the highest point of the print roller. Density of the print image is the greatest at this point.

⇒ Set the parallelism of horizontal lines with the edge of the label.

CAUTION!

The printhead assembly can be damaged.

Attempting to adjust the printhead when the fixing screw (E) is tight can lead to defects at the printhead assembly.

⇒ Always loosen the fixing screw (E) before adjusting the printhead.

NOTICE!

Open and close the printhead locking device after each step of the adjustment.

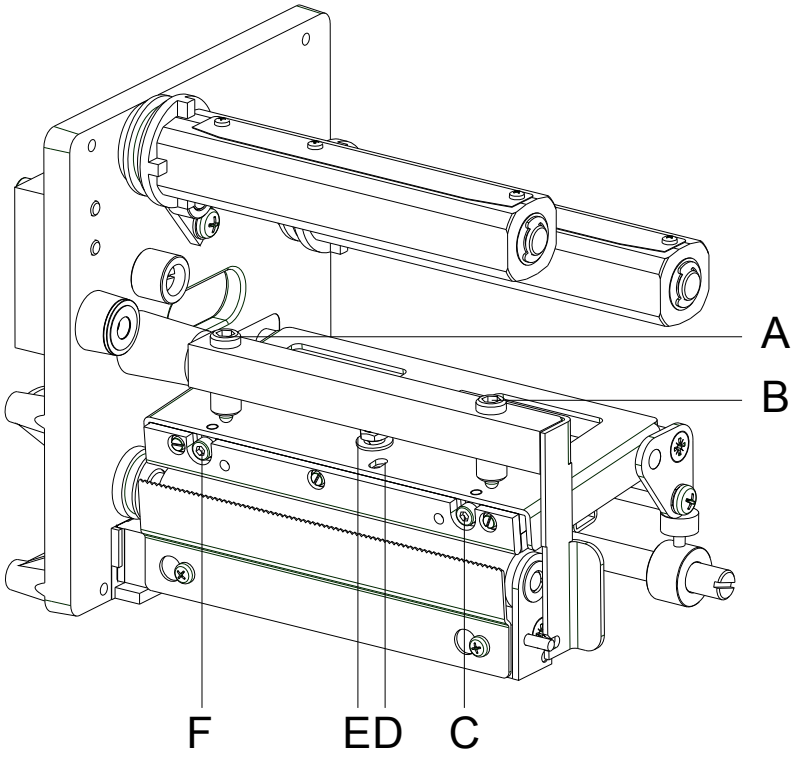


Figure 13

Parallelism

An important characteristic for a high quality print is the parallelism of the focal line of the thermal printhead to the pressure roll. Because of the fact that the position of focal line of the printhead depends on fluctuations caused by production, it is necessary to adjust the parallelism.

1. Loosen the fixing screw (E) approx. ¼ rotations.
2. Adjust the parallelism with the adjusting screws (C+F)
   Clockwise = printhead moves forwards
   Counter clockwise = printhead moves backwards
3. Adjust the parallelism as long as the printing result comes up to your full expectation.
4. Tighten again the fixing screws (E).
5. Start a print order with approx. 10 labels and control the correct passage of transfer ribbon.

Pressure

Increasing the head contact pressure leads to an improvement of the print image density on the corresponding side and to a shifting of the ribbon feed path in the corresponding direction.

CAUTION!

Damage of printhead by unequal use!

⇒ Change factory settings only in exceptional cases.

The selection of the smallest value can optimise the life cycle of printhead.

1. Turn the pressure pieces (A+B) to change the pressure of printhead.
2. Turning the pressure pieces
   in clockwise direction increases the pressure
   anticlockwise reduces the pressure.
3. Tighten again the pressure lever clockwise to lock the printhead.

Print position

Check the position of printout and if necessary adjust the print position (see chapter 5.3).

6.3 Adjusting the Transfer Ribbon Feed Path

Adjust the transfer ribbon feed path by changing the head contact pressure. Increasing the head contact pressure with the screws (A) and (B) shifts the ribbon feed path in the corresponding direction. Possibly arising formation of wrinkles can be eliminated by bowing the printhead.

CAUTION!

The printhead assembly can be damaged when bowing the printhead.

Turning the adjustment screw (D) too hard can cause damage to the printhead assembly.

⇒ As soon as a clear resistance is perceived when turning the adjustment screw (D), only continue turning the screw in very small increments, but no more than one eighth of a turn.

⇒ Only turn the adjustment screw (D) as far as is absolutely necessary.

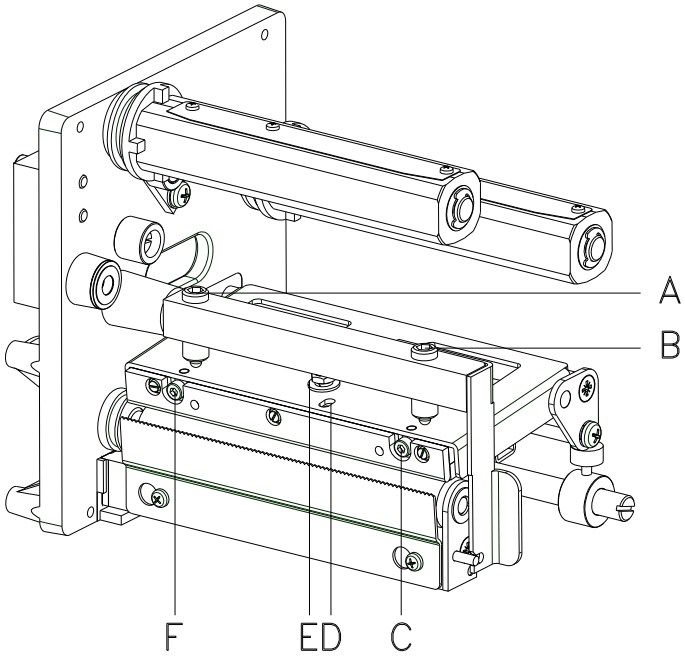


Figure 14

1. Check the transfer ribbon feed path.
   The wound up ribbon should be the same distance from the disk of the winder as the supply roller is from the disk of the rewinder.
2. If the ribbon runs inward or outward, turn the corresponding screw (C) or (F) clockwise in small increments.
3. Wait until the ribbon feed path has stabilized after each step of the adjustment.
4. Check the ribbon feed path for wrinkles.
5. If the wrinkles cannot be remedied (e.g. wrinkles in the centre), turn the adjustment screw (D) clockwise with extreme care (see warnings) using a hexagonal wrench (1.5 mm) and observe the ribbon feed path.
   When the adjustment screw (D) is tightened, the printhead is bent downward slightly in the centre. It is possible that a slight lightening at the edge areas of the print image could occur here.

6.4 Oil and Lubricate

NOTICE!

Make sure when oiling and greasing that no lubricants deposit on photocells, electronic components, circuit boards, printhead and rolls.

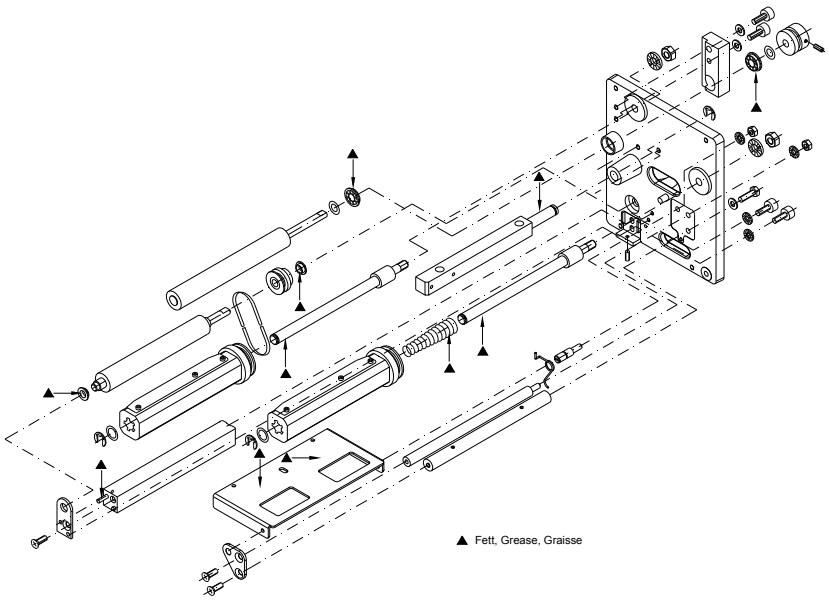


Figure 15

In case that dust or other dirt is deposit you have to clean the lubrication at first with alcohol.

Apply rather in regular intervals (1-2 per year) a bit of lubricant, as only rarely too much. Otherwise the surplus of lubricant could settle on neighbouring components and disturb the functions.

In case those components should have run it because of lack of lubricant, exchange these as soon as possible so the functions of the components and the printer remain.

Install again all components which you have dismantled for the lubrication in the correct position.

Take care e.g. tensions of belt, springs etc.

7 Refitting Options

DANGER!

Risk of death via electric shock!

⇒ Before opening the housing cover, disconnect the device from the mains supply and wait approx. 2 - 3 minutes until the power supply unit has discharged.

7.1 I/O Plate

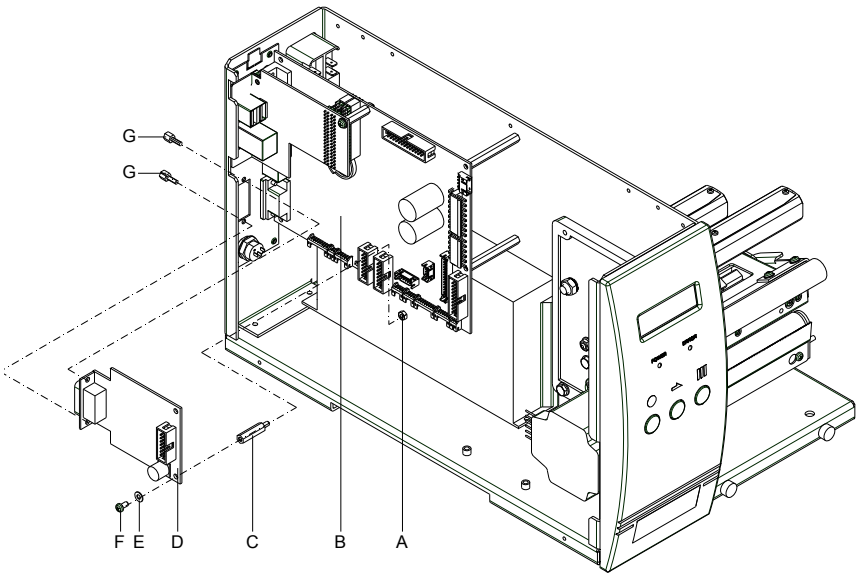


Figure 16

1. Remove the left printer cover.
   Loosen two screws at the lower left printer edge and three screws at the chassis upper edge.
2. Remove the protective conductor at the inside of the printer cover.
3. Remove cover at the interface disruption from the chassis rear.
4. Mount the distance olt (C) with the hex-nut (A) at the CPU PCB.
5. Fix the I/O plate (D) with fixing screws (G) at the aft disruption and with screw (F) and washer (E) at the CPU PCB (B).
6. Insert the connecting cables for inputs/outputs corresponding to the wiring plan (see chapter 9, on page 47) into the appropriate plug-in positions of the I/O plate and CPU PCB.
7. Connect the protective conductor to the inside of printer cover.
8. Mount again the printer cover.

7.2 Ethernet Plate

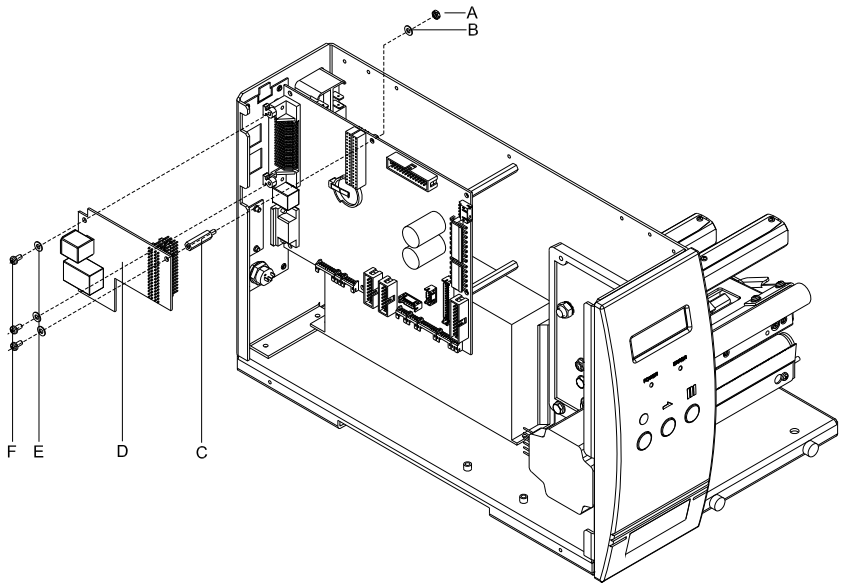


Figure 17

1. Remove the left printer cover.
   Loosen two screws at the lower left printer edge and three screws at the chassis upper edge.
2. Remove the protective conductor at the inside of the printer cover.
3. Remove cover at the interface disruption from the chassis rear.
4. Mount the distance bolt (C) with the hex-nut (A) and washer (B) at the CPU PCB.
5. Insert the Ethernet plate into the appropriate plug-in positions on the CPU PCB.
6. Fix the Ethernet plate with the fixing screws (F) and washers (E) at the disruption and at the CPU PCB.
7. Connect the protective conductor to the inside of printer cover.
8. Mount again the printer cover.

7.3 Dispensing Unit

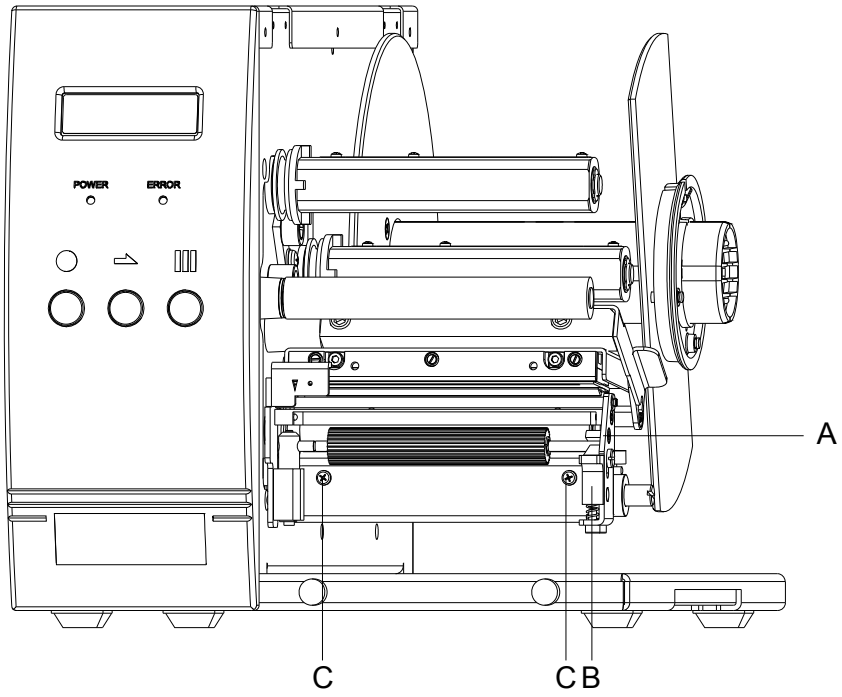


Figure 18

Dispensing unit without photocell

1. Remove the front panel and tear off edge (if mounted) at the front of printer.
2. Press the red button (B) to open the dispenser roller.
3. Place the dispensing unit (A) in front of the pressure roller. Guide downwards the photocell cable between chassis and left support plate of the dispenser (only for dispensing unit with photocell).
4. Fix the dispensing unit with crosshead screws (C) at the aluminium profile underneath the pressure roller.
5. Engage again the dispensing whip.

Dispensing unit with photocell

1. Remove left printer cover.
   Loosen two screws at the lower left printer edge and three screws at the chassis upper edge.
2. Remove the protective conductor at the inside of the printer cover.
3. Guide the plug of the photocell cable through the slot hole in the main plate.
4. Insert the photocell cable corresponding to the wiring plan (see chapter 9, on page 47) into the appropriate plug-in positions of the dispensing photocell.
5. Connect the protective conductor to the inside of printer cover.
6. Mount again the printer cover.

7.4 Cutting Unit

CAUTION!

Risk of injury, particularly during maintenance, the cutter blades are sharp!

⇒ Switch off the before attaching the cutter!

⇒ The cutter may only be used when it is mounted on the printer!

⇒ Do not try to cut any materials which exceed the maximum width or thickness specifications.

⇒ Do NOT touch the area of the moving blades!

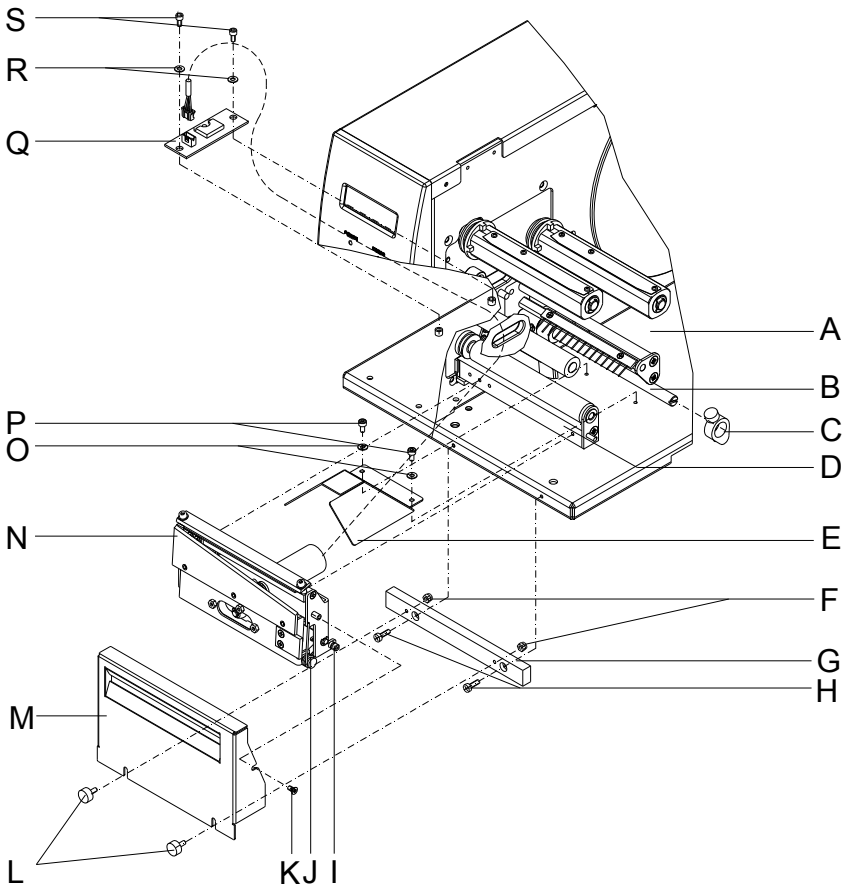


Figure 19

1. Remove the front panel and tear off edge (if mounted) and the knurled screw (L) at the front of printer.
2. Remove left printer cover.
   Loosen two screws at the lower left printer edge and three screws at the chassis upper edge.
3. Remove the protective conductor at the inside of the printer cover.

4. Mount the enclosed motor cover (E) with discs (O) and screws (P) at the printer bottom (A).
5. Mount the two knurled screws (L) and the two lock nuts (F) at the flat rod (G).
6. Mount the flat rod (G) with screws (H) to the printer front.
7. Hang out at spring pin (I) the leg spring (J) of cutting unit (B).
8. Guide the plug of the cutter cable through the slot hole in the main plate.
9. Fix the cutting unit (N) with the enclosed screw at the aluminum profile.
10. Engage the leg spring (J) at spring pin (I) of cutting unit (N).
11. Fix the cutter front plate (M) of cutting unit (N) with knurled screws (L) at the flat rod (G) and on the side with screw (K).
12. Mount the label guiding (C) on the reversing shaft(B).
13. Mount the motor plate (Q) with the washers (R) and screws (S) at the bottom of printer.
14. Insert the cutter and connection cable corresponding to the wiring plan (see chapter 9, on page 47) into the appropriate plug-in positions of the PCB.
15. Connect the protective conductor to the inside of printer cover.
16. Mount again the printer cover.

8 Error correction

Error message	Cause	Remedy
1 Line too high	Line rises up completely or partly over the upper edge of label.	Move line down (increase Y value). Check rotation and font.
2 Line too low	Line rises up completely or partly over the bottom edge of label.	Move line up (reduce X value). Check rotation and font.
3 Character set	One res. several characters of the text is res. are not available in the selected font.	Change text. Change font.
4 Unknown code type	Selected code is not available.	Check code type.
5 Unvalid position	Selected position is not available.	Check position.
6 CV font	Selected font is not available.	Check font.
7 Vector font	Selected font is not available.	Check font.
8 Measuring label	While measuring no label was found. Set label length is too large.	Check label length and if labels are inserted correctly. Restart measuring anew.
9 No label found	No label available. Soiled label photocell. Labels not inserted correctly.	Insert new label roll. Check if labels are inserted correctly. Clean the label photocell.
10 No ribbon	During the print order the ribbon roll becomes empty (front printhead). Defect at the transfer ribbon photocell (front photocell).	Change transfer ribbon. Check transfer ribbon photocell (service functions).
11 COM FRAMING	Stop bit error.	Check stop bits. Check baud rate. Check cable (printer and PC).
12 COM PARITY	Parity error.	Check parity. Check baud rate. Check cable (printer and PC).
13 COM OVERRUN	Loss of data at serial interface (RS-232).	Check baud rate. Check cable (printer and PC).

Error message	Cause	Remedy
14 Field numer	Received line number is invalid at RS-232 and Centronics.	Check sent data. Check connection PC - printer.
15 Length mask	Invalid length of received mask statement.	Check sent data. Check connection PC - printer.
16 Unknown mask	Transferred mask statement is invalid.	Check sent data. Check connection PC - printer.
17 Missing ETB	No end of data found.	Check sent data. Check connection PC - printer.
18 Invalid character	One res. several characters of the text is res. are not available in the selected font.	Change text. Change font.
19 Invalid statement	Unknown transferred data record.	Check sent data. Check connection PC - printer.
20 Invalid check digit	For check digit control the entered res. received check digit is wrong.	Calculate check digit anew. Check code data.
21 Invalid SC number	Selected SC factor is invalid for EAN res. UPC.	Check SC factor.
22 Invalid number of digits	Entered digits for EAN res. UPC are invalid < 12; > 13.	Check number of digits.
23 Check digit calculation	Selected check digit calculation is not available in the bar code.	Check calculation of check digit. Check bar code type.
24 Invalid extension	Selected zoom factor is not available.	Check zoom factor.
25 Offset sign	Entered sign is not available.	Check offset value.
26 Offset value	Entered offset value is invalid.	Check offset value.
27 Printhead temperature	Printhead temperature is too high. Defective printhead sensing device.	Reduce contrast. Change printhead.
28 Cutter error	With cut an error occurred. Paper jam.	Check label run. Check cutter run.
29 Invalid parameter	Entered data do not correspond to the characters allowed from the application identifier.	Check code data.

Error message	Cause	Remedy
30 Application Identifier	Selected application identifier is not available in GS1-128.	Check code data.
31 HIBC definition	F Missing HIBC system sign. Missing primary code.	Check definition of HIBC code.
32 System clock	Real Time Clock function is selected but the battery is empty. Defective RTC.	Change battery. Change RTC component.
33 No CF interface	Interrupted connection CPU - CF card. Defective CF card interface.	Check connection CPU - CF card interface. Check CF card interface.
34 No print memory	No print CF found.	Check CF assembly on CPU.
35 Cover open	At start of a print order the printhead is open.	Close the printhead and start print order anew.
36 BCD invalid format	BCD error Invalid format for the calculation of Euro variable.	Check entered format.
37 BCD overflow	BCD error Invalid format for the calculation of Euro variable.	Check entered format.
38 BCD division	BCD error Invalid format for the calculation of Euro variable.	Check entered format.
39 FLASH ERROR	Flash component error.	Run a software update. Change CPU.
40 Length command	Invalid length of the received command statement.	Check data sent. Check connection PC - printer.
41 No drive	CF card not found / not correctly inserted.	Insert CF card correctly.
42 Drive error	Impossible to read CF card (faulty).	Check CF card, if necessary change it.
43 Not formatted	CF Card not formatted.	Format CF card.
44 Delete current directory	Attempt to delete the actual directory.	Change directory.
45 Path too long	Too long indication of path.	Indicate a shorter path.

Error message	Cause	Remedy
46 Drive write-protected	Memory card is write-protected.	Deactivate write protection.
47 Directory not file	Attempt to indicate a directory as file name.	Correct your entry.
48 File already open	Attempt to change a file during an access is active.	Select another file.
49 No file/directory	File does not exist on CF card.	Check file name.
50 Invalid file name	File name contains invalid characters.	Correct entry of name, remove special characters.
51 Internal file error	Internal file system error.	Please contact your distributor.
52 Root full	The max. number (64) of main directory entries is reached.	Delete at least one main directory entry and create subdirectories.
53 Drive full	Maximum CF capacity is reached.	Use new CF Card, delete no longer required files.
54 File/directory exists	The selected file/directory already exists.	Check name, select a different name.
55 File too large	During copying procedure not enough memory space onto target drive available.	Use a larger target card.
56 No update file	Errors in update file of firmware.	Start update file anew.
57 Invalid graphic file	The selected file does not contain graphic data.	Check file name.
58 Directory not empty	Attempt to delete a not empty directory.	Delete all files and sub-directories in the desired directory.
59 No interface	No CF card drive found.	Check connection of CF card drive. Contact your distributor
60 No CF card	No CF card is inserted.	Insert CF card in the slot.
61 Webserver error	Error at start of web server.	Please contact your distributor.
62 Wrong FPGA	The direct print module is equipped with the wrong FPGA.	Please contact your distributor.
63 End position	The label length is too long. The number of labels per cycle is too much.	Check label length res. the number of labels per cycle.

Error message	Cause	Remedy
64 Zero point	Defective photocell.	Change photocell.
65 Compressed air	Pressure air is not connected.	Check pressure air.
66 External releaser	External print release signal is missing.	Check input signal.
67 Row too long	Wrong definition of column width res. number of columns.	Reduce the column width res. correct the number of columns.
68 Scanner	The connected bar code scanner signals a device error.	Check the connection scanner/printer. Check scanner (dirty).
69 Scanner NoRead	Bad print quality. Printhead completely soiled or defective. Print speed too high.	Increase contrast. Clean printhead or exchange (if necessary). Reduce print speed.
70 Scanner data	Scanned data does not correspond to the data which is to print.	Exchange printhead.
71 Invalid page	As page number either 0 or a number > 9 is selected.	Select a number between 1 and 9.
72 Page selection	A page which is not available is selected.	Check the defined pages.
73 Page not defined	The page is not defined.	Check the print definition.
74 Format user guiding	Wrong format for customised entry.	Check the format string.
75 Format date/time	Wrong format for date/time.	Check the format string.
76 Hotstart CF	No CF card found.	If option hotstart was activated, a CF card must be inserted. Switch off the printer before inserting the memory card.
77 Flip/Rotate	Selection of print of several columns and also mirror/rotate.	It is only possible to select one of both functions.
78 System file	Loading of temporary hotstart files.	Not possible.
79 Shift variable	Faulty definition of shift times (overlapping times).	Check definition of shift times.
80 GS1 Databar	General GS1 Databar error.	Check definition and parameter of GS1 Databar code.
81 IGP error	Protocol error IGP.	Check sent data.

Error message	Cause	Remedy
82 Time generation	Printing creation was still active at print start.	Reduce print speed. Use printers' output signal for synchronisation. Use bitmap fonts to reduce generating time.
83 Transport protection	Both DPM position sensors (start/end) are active.	Displace zero point sensor Check sensors in service functions menu
84 No font data	Font and web data is missing.	Run a software update.
85 No layout ID	Label ID definition is missing.	Define label ID onto the label.
86 Layout ID	Scanned data does not correspond to defined ID.	Wrong label loaded from CF card.
87 RFID no label	RFID unit cannot recognise a label.	Displace RFID unit or use an offset.
88 RFID verify	Error while checking programmed data.	Faulty RFID label. Check RFID definitions
89 RFID timeout	Error at programming the RFID label.	Label positioning. Faulty label.
90 RFID data	Faulty or incomplete definition of RFID data.	Check RFID data definitions.
91 RFID tag type	Definition of label data does not correspond with the used label.	Check storage partitioning of used label type
92 RFID lock	Error at programming the RFID label (locked fields).	Check RFID data definitions. Label was already programmed.
93 RFID programming	Error at programming the RFID label.	Check RFID definitions.
94 Scanner timeout	The scanner could not read the bar code within the set timeout time.	
	Defective printhead. Wrinkles in transfer ribbon. Scanner wrong positioned. Timeout time too short.	Check printhead. Check transfer ribbon. Position scanner correctly, corresponding to the set feeding. Select longer timeout time.

Error message	Cause	Remedy
95 Scanner layout difference	Scanner data does not correspond to bar code data.	Check adjustment of scanner. Check scanner settings / connection.
96 COM break	Serial interface error.	Check settings for serial data transmission as well as cable (printer-PC).
97 COM general	Serial interface error.	Check settings for serial data transmission as well as cable (printer-PC).
98 No software printhead FPGA	No printhead-FPGA data available.	Please contact your responsible distributor.
99 Load software printhead FPGA	Error when programming printhead-FPGA.	Please contact your responsible distributor.
100 Upper position	Sensor signal up is missing (option APL 100).	Check input signals / compressed-air supply.
101 Lower position	Sensor signal down is missing (option APL 100).	Check input signals / compressed-air supply.
102 Vacuum plate empty	Sensor does not recognise a label at vacuum plate (option APL 100).	Check input signals / compressed-air supply.
103 Start signal	Print order is active but device not ready to process it.	Check start signal.
104 No print data	Print data outside the defined label. Selection of wrong module type (design software).	Check selected module type. Check selection of left/right version.
105 Printhead	No original printhead is used.	Check the used printhead. Contact your distributor.
106 Invalid Tag type	Wrong Tag type. Tad data do not match the Tag type in the printer.	Adapt data or use the correct Tag type.
107 RFID invalid	RFID module is not activated. No RFID data can be processed.	Activate RFID module or remove RFID data from label data.
108 GS1-128 invalid	Transferred GS1-128 bar code is invalid.	Verify bar code data (see GS1-128 bar code specification).
109 EPC parameter	Error at EPC calculation.	Verify data (see EPC specification).

Error message	Cause	Remedy
110 Housing open	When starting the print order the housing cover is not closed.	Close the housing cover and start the print order anew.
111 EAN.UCC code	Transferred EAN.UCC code is invalid.	Verify bar code data (see corresponding specification).
112 Print carriage	Printing carriage does not move.	Check gear belt (possibly broken).
113 Applicator error	Error while using applicator.	Check applicator.
114 Left position	Left final position switch is not in correct position.	Check LEFT final position switch for correct function and position. Check function of pneumatics for cross traverse.
115 Right position	Right final position switch is not in correct position.	Check RIGHT final position switch for correct function and position. Check function of pneumatics for cross traverse.
116 Print position	The print position is not correct.	Check TOP and RIGHT final position switch for correct function and position. Check pneumatics for function
117 XML parameter	The parameters in the XML file are not correct.	Please contact your responsible distributor.
118 Invalid variable	Transferred variable is invalid with customized entry.	Select correct variable without customized entry and transfer it.
119 No ribbon	During the print order the ribbon roll becomes empty (rear printhead). Defect at the transfer ribbon photocell (rear photocell).	Change transfer ribbon. Check transfer ribbon photocell (service functions).
120 Wrong directory	Invalid target directory when copying.	Target directory must not be within the source directory. Check target directory.
121 No label found	No label found at the rear printhead (DuoPrint). Soiled label photocell. Labels not inserted correctly.	Insert new label roll. Clean the label photocell. Check if labels are inserted correctly.
122 IP occupied	The IP address was already assigned.	Assign a new IP address.

Error message	Cause	Remedy
123 Print asynchronous	The label photocell do not work in the order as it is expected according to print data.	Check label size and gap size.
	The settings of the photocell are not correct.	Check label photocell settings.
	Settings of label size and gap size are not correct.	Check correct loading of label material.
	No label found at the rear printhead.	Insert new label roll.
	Soiled label photocell.	Clean the label photocell.
	Labels not inserted correctly.	Check if labels are inserted correctly.
124 Speed too slow	The print speed is too slow.	Increase the speed of customers' machine.

9 Control Inputs and Outputs

By means of a maximum of 16 control inputs and outputs which, in the following, are also referred to as ports, different functions of the printer system can be triggered and operating states can be displayed.

The ports are provided by means of a D-Sub bushing (26pin HD) at the rear panel of the printer system and are galvanically isolated from protective earth (PE) by means of an optocoupler semi-conductor route.

Each port can be configured as input and as output. This function however, is predefined in the printer software and cannot be changed by the user.
The following parameters can be changed and set by using the menu: debounce times and high or low active.

Printer, internal circuitry

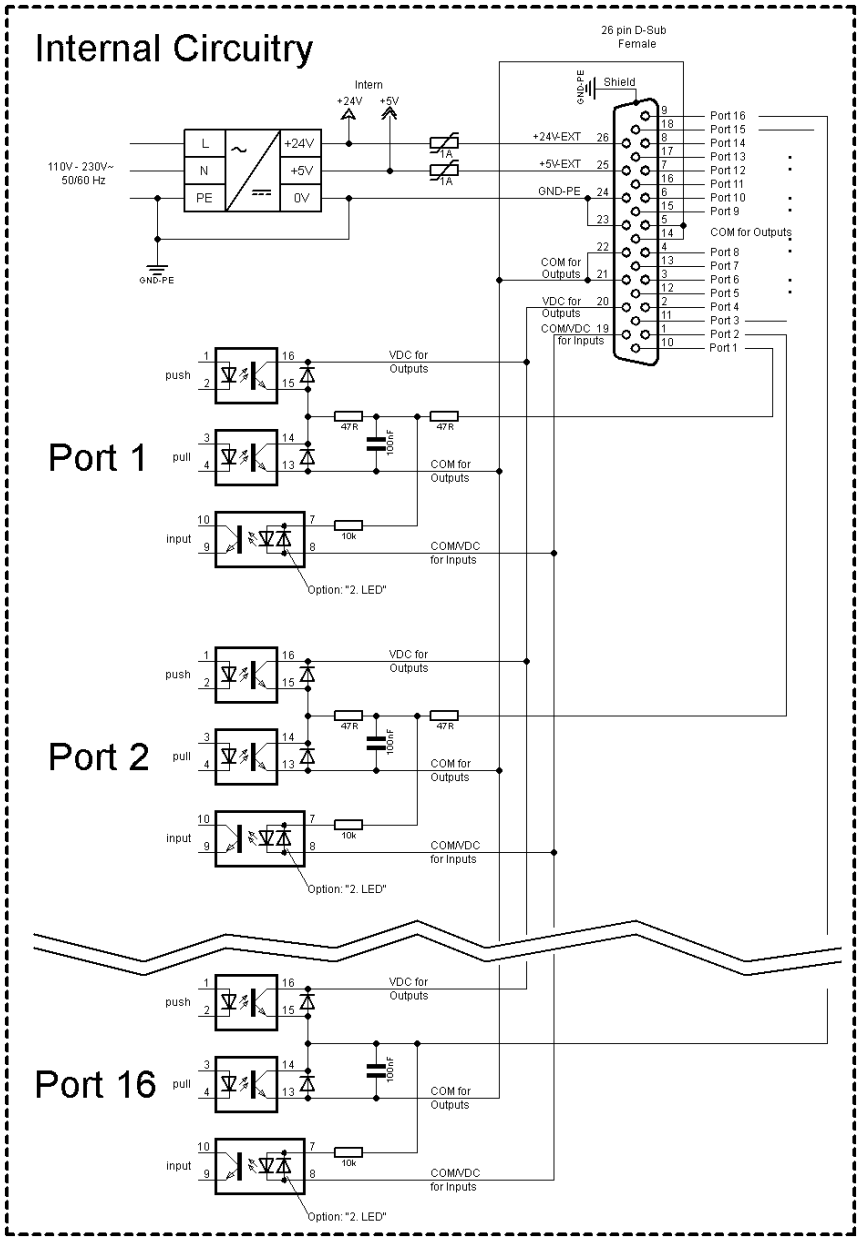


Figure 20

Configuration of D-Sub socket

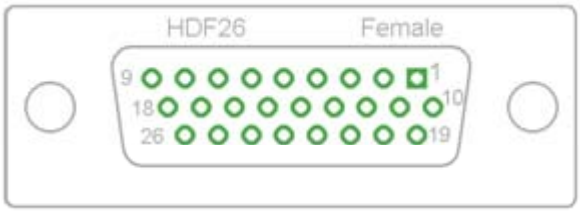


Figure 21

Port 1 to Port 16 = Assignment for I/O Profile 'Std_Label'

Identification	Pin	Description / Function
Port 1	10	Print start and cut (Input)
Port 2	1	Reprint last printed label (Input)
Port 3	11	Counter Reset (Input)
Port 4	2	No function
Port 5	12	Error reset (Input)
Port 6	3	No function
Port 7	13	No function
Port 8	4	No function
Port 9	15	Error (Output)
Port 10	6	Print order activ (Output)
Port 11	16	Dispenser photocell: Label exists at dispenser photocell (Output)
Port 12	7	Single print (Output)
Port 13	17	Ready (Output)
Port 14	8	No function
Port 15	18	No function
Port 16	9	Prior warning for transfer ribbon end (Output)
COM/VDC for Inputs	19	Common reference potential of all control inputs. 'COM/VDC for Inputs' is usually connected with the (-) terminal of the control voltage and the control inputs are switched to active (+). By means of the option '2nd LED', 'COM/VDC for Inputs' can optionally be connected with the (+) terminal of the control voltage. Then, the control inputs are switched to active (-).
VDC for Outputs	20	Common supply connection of all control outputs. 'VDC for Outputs' must be connected with the (+) terminal of the control voltage. Never leave 'VDC for Outputs' open even if no output is used.
COM for Outputs	5,14 21,22	Common reference potential of all control outputs. 'COM for Outputs' must be connected with the (-) terminal of the control voltage. Never leave 'COM for Outputs' open even if no output is used.
GND-PE	23,24	'GND-PE' is the reference potential of the '+5 VDC EXT' and '+24 VDC EXT' voltages provided by the printer system. 'GND-PE' is printer internally connected with protective earth (PE).

Identification	Pin	Description / Function
+ 5 VDC EXT	25	5 Volt DC output for external use. Max. 1 A. This voltage is provided from direct print module and can be used e.g. as control voltage. Never apply any external voltage to this output.
+ 24 VDC EXT	26	24 Volt DC output for external use. Max. 1 A. This voltage is provided from direct print module and can be used e.g. as control voltage. Never apply any external voltage to this output.

Technical data

Plug Connector	
Type	D-Sub connector High Density 26-pin. / connector
Manufacturer	W+P-Products
Reference number	110-26-2-1-20
Output Voltages (connected with GND-PE)	
+ 24 V / 1 A	Fuse: Polyswitch / 30 V / 1 A
+ 5 V / 1 A	Fuse: Polyswitch / 30 V / 1 A
Port 1 - 15	
Input	
Tension	5 VDC … 24 VDC
Impedance	47Ω + (100nF || 10 kΩ)
Output	
Tension	5 VDC … 24 VDC
Impedance	47Ω + (100nF || 10 kΩ || 47Ω)
Current max.	High +15 mA Low -15 mA
Port 16	
Input	
Tension	5 VDC … 24 VDC
Impedance	100nF || 10 kΩ
Output	
Tension	5 VDC … 24 VDC
Impedance	100nF || 10 kΩ
Current max.	High +500 mA (Darlington BCP56-16) Low - 500 mA (Darlington BCP56-16)
Optocoupler	
Output	TCMT4106, CTR 100% - 300%, Vishay or TLP281-4(GB), CTR 100% - 600%, Toshiba
Input	TCMT4106, CTR 100% - 300%, Vishay or TLP281-4(GB), CTR 100% - 600%, Toshiba
Input Option 2nd LED	TCMT4600, CTR 80% - 300%, Vishay or TLP280-4, CTR 33% - 300%, Toshiba

Example 1 Device connection to a machine with S7-300 SPS.

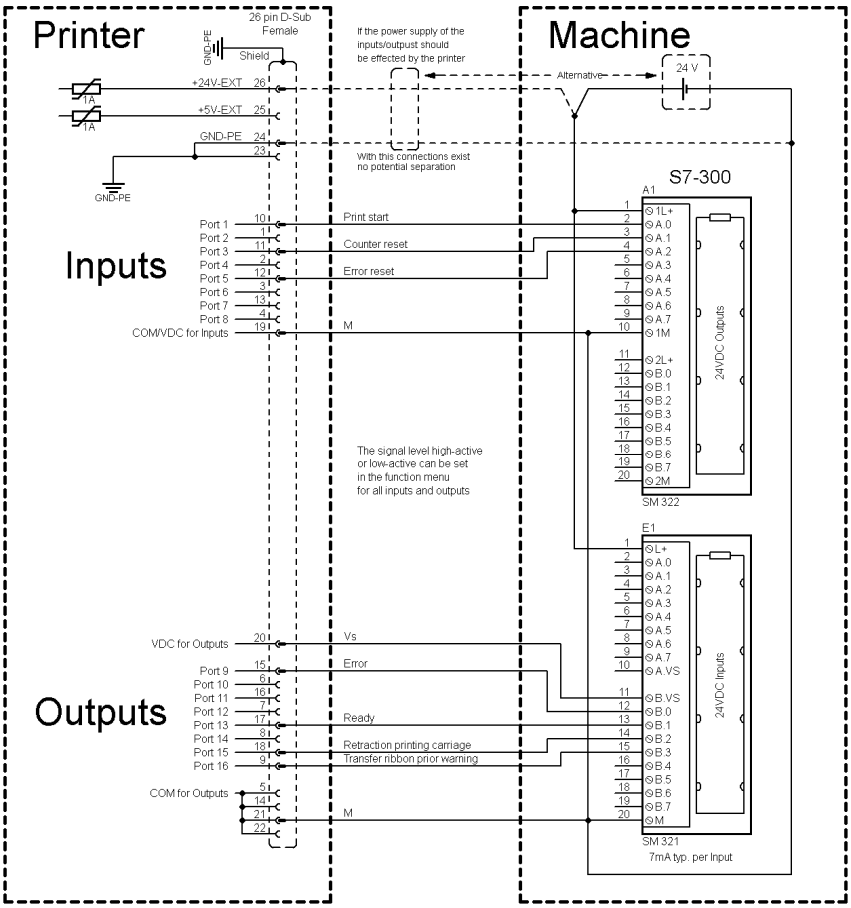


Figure 22

Example 2 Device connection to a operating panel.

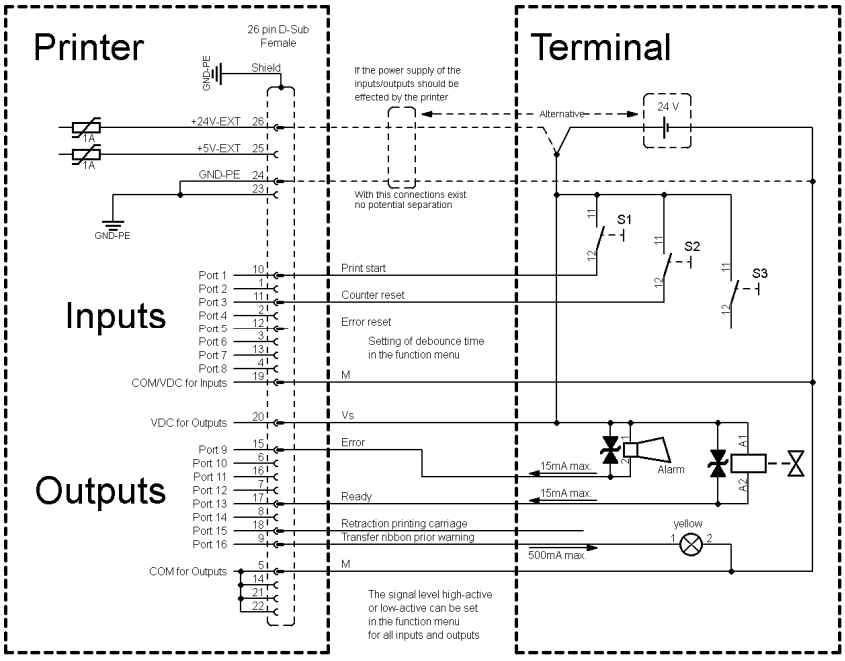


Figure 23

Example 3

Device connection version if 'Option: 2. LED'.

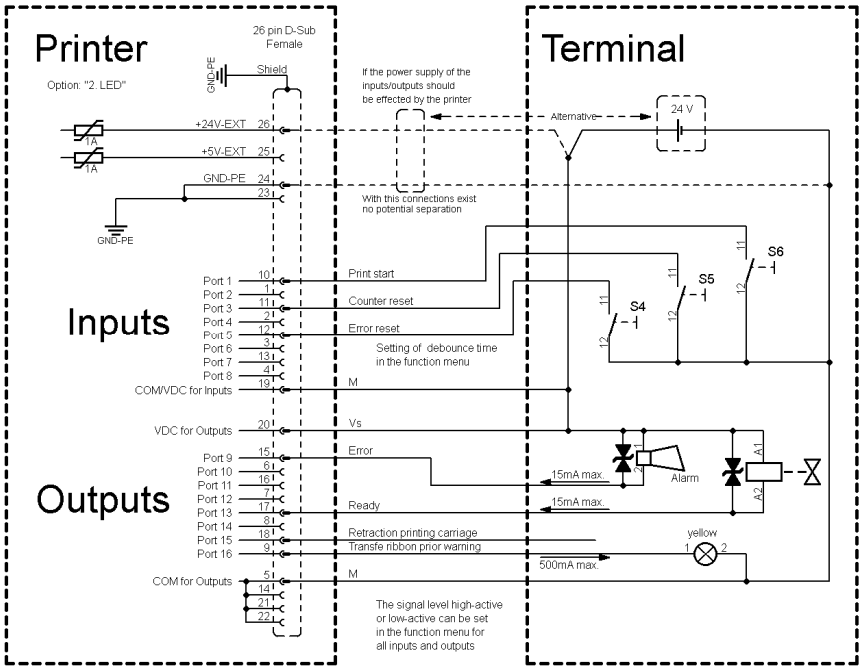


Figure 24

Precautions

When connecting a reed contact with a control input, the contact must have a switching capacity of min. 1 A in order to prevent the contact from sticking due to the inrush current. As an alternative, a suitable resistor can be connected in series.

If one of the printer's internal voltages '+5 VDC EXT' or '+24 VDC EXT' is used, an external fuse e.g. 0.5 AF, should be additionally installed to protect the printer electronics.

In the event of an inductive load, an antiparallel connected diode, for instance, must be used to discharge the induction energy.

In order to minimise the influence of leakage currents at control outputs, a resistor must, depending on what is connected, be installed in parallel with the load.

In order to avoid any damages to the printing system, the max. output currents must not be exceeded or outputs shorted.

10 Wiring Plan

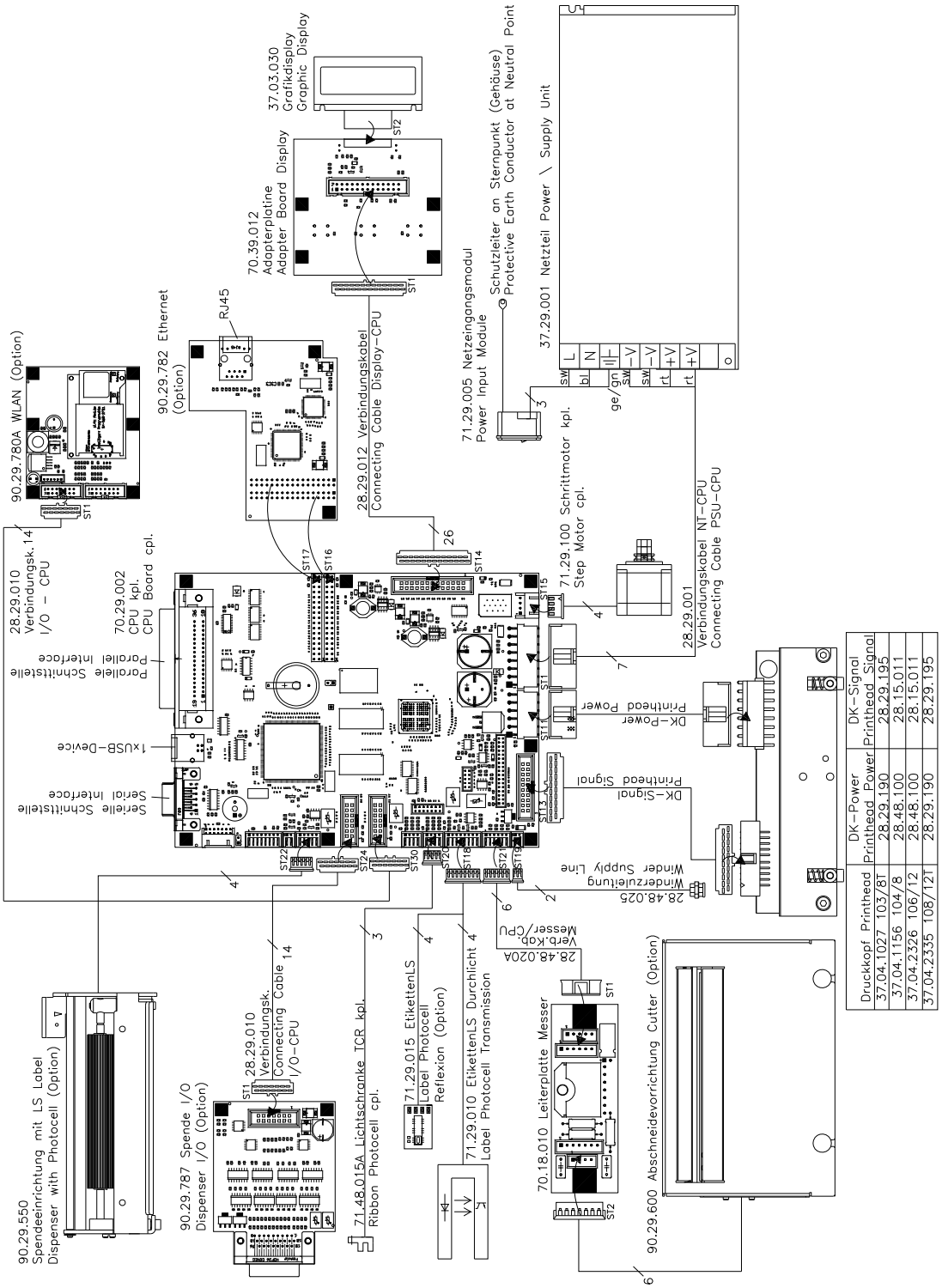

37.03.030 Grafikdisplay Graphic Display
70.39.012 Adapterplatine Adapter Board Display
37.29.001 Netzteil Power \ Supply Unit
Schutzleiter an Sternpunkt (Gehäuse) Protective Earth Conductor at Neutral Point
71.29.005 Netzeingangsmodul Power Input Module
90.29.782 Ethernet (Option)
RJ45
90.29.780A WLAN (Option)
28.29.012 Verbindungskabel Connecting Cable Display-CPU
28.29.010 Verbindungsk.14 I/O - CPU
70.29.002 CPU kpl. CPU Board cpl.
71.29.100 Schrittmotor kpl. Step Motor cpl.
28.29.001 Verbindungskabel NT-CPU Connecting Cable PSU-CPU
Parallele Schnittstelle Parallel Interface
1xUSB-Device
Serielle Schnittstelle Serial Interface
DK-Power Printhead Power
DK-Signal Printhead Signal
28.48.025 Winderzuleitung Winder Supply Line
28.48.020A Verb.Kab. Messer/CPU
90.29.550 Spendeeinrichtung mit LS Label Dispenser with Photocell (Option)
90.29.787 Spende I/O Dispenser I/O (Option)
28.29.010 Verbindungsk. Connecting Cable 14 I/O-CPU
71.48.015A Lichtschranke TCR kpl. Ribbon Photocell cpl.
71.29.015 EtikettenLS Label Photocell Reflexion (Option)
71.29.010 EtikettenLS Durchlicht Label Photocell Transmission
70.18.010 Leiterplatte Messer
90.29.600 Abschneidevorrichtung Cutter (Option)
Druckkopf Printhead | DK-Power Printhead Power | DK-Signal Printhead Signal
37.04.1027 103/8T | 28.29.190 | 28.29.195
37.04.1156 104/8 | 28.48.100 | 28.15.011
37.04.2326 106/12 | 28.48.100 | 28.15.011
37.04.2335 108/12T | 28.29.190 | 28.29.195

Figure 25

10.1 CPU Component Placement Specification

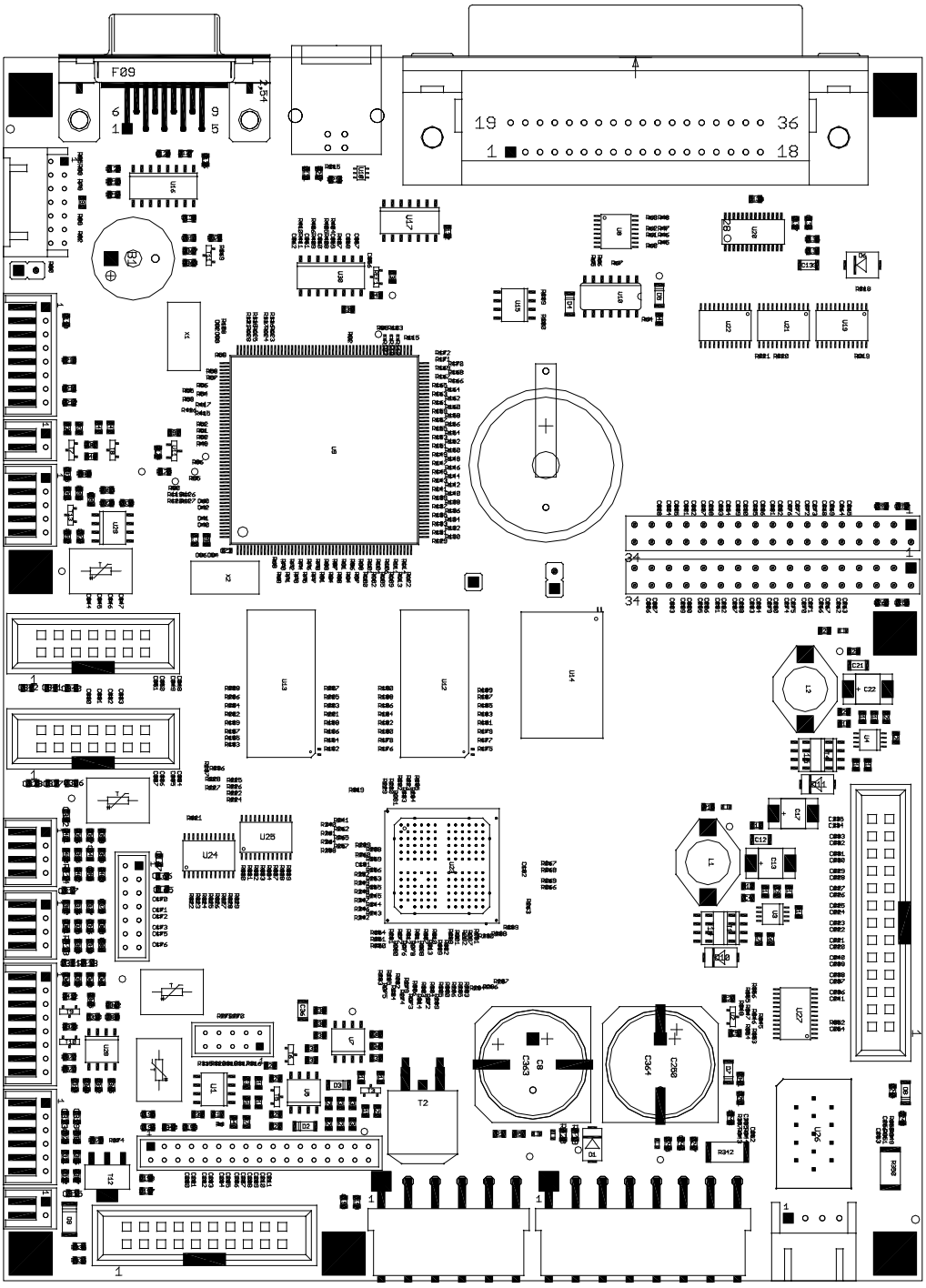
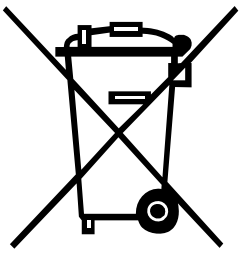


Figure 26

Jumper plan

	JP1 (Debug)	JP2 (write-protection)
Boot sector Programming	closed	closed
Delivery	closed	open

11 Environmentally-Friendly Disposal



Manufacturers of B2B equipment are obliged to take back and dispose of old equipment that was manufactured after 13 August 2005. As a principle, this old equipment may not be delivered to communal collecting points. It may only be organised, used and disposed of by the manufacturer. Valentin products accordingly labelled can therefore be returned to Carl Valentin GmbH.

This way, you can be sure your old equipment will be disposed of correctly.

Carl Valentin GmbH thereby fulfils all obligations regarding timely disposal of old equipment and facilitates the smooth reselling of these products. Please understand that we can only take back equipment that is sent free of carriage charges.

Further information on the WEEE directive is available on our website www.carl-valentin.de.

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DRUCKSYSTEME

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